NCS 2041, NCS 2043, NCS 2044, NCS 2046, NCS 2048, NCS 2049, NCS 2055, NCS 2057, NCS 2072, NCS 2107, and Palman 579. Lesion lengths ranged from 2.2 cm to 3.6 cm. Some cultivars were susceptible as seedlings but resistant at adult stage — ARC 5913, ARC 5938, ARC 5951, ARC 6248, ARC 10602, ARC 11281, Denga Faram, IR2035-117-3, IR15705-199-3-3, Jhinwa, Jikkoku/Serpheke chil 52-102, Mudgo, NCS 320, NCS 332, NCS 338, NCS 335, NCS 2015, NCS 201 8, Sinna Sivappu, T 1426, Vallathil Cheera, and Vellai Langayan. Disease scores ranged from 2.2 to 3.8. ■

Disease reaction of some rice stocks at seedling and at adult plant stage at Punjab, India.

Stock or cultivar	Source	Lesion length (cm) at seedling stage		Scores at adult stage (0-9 scale)
		Mean	Range	
MTUl5/Waiseakokku-127	CRRI	3.65	2.0-7.0	2.7
ARC6044	CRRI	3.75	2.5-5.0	4.0
ARC11321	CRRI	3.68	2.0-6.0	3.4
ARC11367	CRRI	2.75	2.0-4.5	2.2
IET6123	CRRI	3.40	2.5-4.5	3.4
NCS2001	CRRI	3.50	1.5-5.0	3.0
NCS2009	CRRI	1.43	0.5-2.5	3.2
NCS2039	CRRI	2.48	2.0-3.5	3.7
NCS1604	CRRI	3.98	2.0-8.0	3.4
Kogyoku (*Xa 1*)	IRRI	1.50	1.0-2.0	0.8
Tetep (*Xa 1 + Xa 2*)	IRRI	1.20	0.5-2.5	1.4
Wau Qikoku-3 (*Xa 3*)	IRRI	2.23	1.0-4.5	1.7
IR1545-339 (*xa 5*)	IRRI	2.95	2.0-4.5	1.3
IR20 (*Xa 4*)	IRRI	4.78	3.0-7.0	5.6
TN1 (susceptible check)		16.68	8.5-26.5	6.5

Bacterial blight resistance under natural conditions

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During the 1980 and 1981 wet seasons, bacterial blight appeared in epidemic form in several pockets of the Chhatisgarh region. During the high natural infection in 1981, germplasm accessions of early and medium duration were screened for resistance, using the Standard Evaluation System for Rice scale.

Of 6,129 cultivars screened, only 1 scored 1, 24 scored 3, and the others 5-9 (Table 1). No seed could be harvested from several highly susceptible lines. No very early variety was resistant.

The 25 cultivars with scores of 1 and 3 (Table 2) have been selected for further tests under artificial inoculation. They have also been crossed with varieties carrying known resistance genes to study their allelic relationship. ■

Table 1. Resistance of germplasm accessions of rice of different maturities for natural bacterial blight epidemic in Raipur, M.P. India.

Maturity group	Accessions screened	Accessions (no.) with given bacterial blight resistance[a] score				
	(no.)	1	3	5	7	9
Extra early (up to 90 days)	558	0	0	14	122	422
Very early (91 to 110 days)	496	0	3	57	138	298
Early (1 11 to 125 days)	2313	1	11	205	833	1263
Medium (126 to 140 days)	2762	0	10	744	1058	950
Total	6129	1	24	1020	2151	2933

[a]Standard Evaluation System for Rice, % hills affected: 1 = less than 1%, 3 = 1-5%, 5 = 6-25%, 7 = 26-50%, 9 = 51-100%.

Table 2. Bacterial blight-resistant varieties at Raipur, M.P., India.

Karhani	Kechana
Benikath	Khuraban
Bhatapyagi	Liktimati
Badshahbhog	Ruingi
Bhatagunda	Rotad
Chingerchopa	Rageem 14
Chinee Kapoor	Safed jeera
Dilbaksa	Sataka
Gotaka	SLO
Jalkesar	Tikurdhan
Kesariya	Vishnubhog
Kosma	X 11
Kariyakora	

Varietal reaction to natural infection of rice tungro virus in Bihar

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Rice tungro virus infection under natural conditions was very high during 1980-81 kharif. The disease appeared the first week of August in transplanted Taichung Native 1 in a dryland field and

Table 1. Varietal reaction to rice tungro virus at Bihar, India.

Resistance score[a]	Released varieties	Promising varieties
3	Pusa 2-21, CR44-35 (Saket 4) Ratna, BR34, Janaki (64-117), BR9, Katarni, IR20	Pusa 33, TCA4, TCA177
5	Rajendra Dhan 201	TCA80-4, IET6263, RP1045-403-1
7	Rasi (IET1444), BR14, BR8, Type 3, Pankaj, Sita, PR106	BIET927, BIET1107, IET5656, ET5882, FH132
9	Jaya, IR8, Mahsuri, BR46, Prasad, Bala, Cauvery, NC1626, Improved Sona	UPR82-1-7, IET6155, BIET724, BG90-2, TCA62-68, TCA62-10, BIET1048, BIET821, IET2707, CRMS37, IET5883, IET5890, IET6314, IET5897, IET6212

[a]1980 Standard Evaluation System for Rice scale of 0-9: 3 = 6-10% incidence, 9 = 81-100%.

in transplanted Bhutahi in a deepwater field. Vector green leafhopper *Nephotettix virescens* populations had been increasing during July. The disease later spread to varietal demonstration plots and other yield evaluation trials. The disease diagnosis was confirmed by the virologist, Central Rice Research Institute, Cuttack.

No control measures were taken. Disease incidence was so severe that yields from some varieties were very low. Released and promising varieties were scored for resistance to tungro according to the Standard Evaluation System for Rice (Table 1).

In the All India Coordinated Rice Improvement Program, severe infection occurred in 2 trials, PVT3 and PVT4 with 128 entries grown in 2 replications in each trial. Four entries from the RP1125 cross (RPW6-13/Ptb 2) showed resistance, another 11 showed moderate resistance, and 15 were intermediate (Table 2). All others were susceptible to highly susceptible.

Tungro reappeared at Pusa and Patna during 1981-82 kharif.

Varietal recommendations for North and South Bihar, where tungro occurrence is becoming a problem, have been changed. Depending upon land situations, the newly recommended varieties are Pusa 2-21 and CR44-35 for dryland transplanting, Ratna and Rajendra Dhan 201 for midland transplanting, BR34 for wetland rainfed, and Janaki for semideep water.

Few resistant lines are available for wetland irrigated fields. Two lines. IET6263 (CR262-19) and RP1045-403, have been found promising. Resistant BR9 and Katarni — fragrant, short-slender, photoperiod-sensitive rices — may be recommended. Type 3, the only variety recommended for export, has been found susceptible to tungro. ■

Table 2. PVT3 and PVT4 entries with resistance to rice tungro virus at Bihar, India.

Score[a]	Cultivars
1	RP1125-1526-2-1-1, RP1125-1526-2-2-3, RP1125-1526-3-2-4, RP1125-1528-1-4-3
3	CR161-42-16, CR186-1, CR236-63, CR276-5, RP1064-14-2-4, IR42, R8-2535, P837, P858, SKL6, Pusa 2-21
5	CR98-7216-CRP 34, CR149-9177-CRRP-19, CR188-10, RP974-29-3-2, RP1045-211-7-3-4, RP1064-14-2-3, RP1091-24, UPR243-63-1, AD9408, AD77496, P835, PY-1, Sonalee, RSB40

[a]1980 Standard Evaluation System for Rice scale of 0-9: 1 = less than 1% incidence, 5 = 21-30%.

Identification of stable sources of resistance to blast in Nepal

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Use of modern Taiwanese ponlai varieties and high doses of nitrogen fertilizer, particularly in the temperate region of the Kathmandu valley and in other hilly regions of Nepal, have resulted in blast becoming a major source of yield losses. It has been possible to identify blast-resistant sources by using IRRI mass-screening techniques (see table). These lines are used extensively in Nepalese rice breeding programs. During 1977-81, high levels of blast resistance were found in cultivars Tetep, Dawn, and Carreon and in lines derived from crosses with them. Blast reactions were scored according to the Standard Evaluation System for Rice. ■

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Highly resistant entries observed in blast nurseries at 2 sites in Nepal.

Cultivar or line	Source of resistance	Blast score[a]									
		Khumaltar (1,327 m alt)					Parwanipur (100 m alt)				
		1977	1978	1979	1980	1981	1977	1978	1979	1980	1981
CIAT-ICA 5	Tetep	1	1	0	3	0	1	1	1	*c*	0
IR1544-238-2-3	Tetep	1	1	0	2	0	1	1	2	1	0
IR1416-128-5-8	Tetep	1	1	0	1	0	1	1	1	*c*	*c*
IR1416-1-42-2-3-3	Tetep	1	1	*b*	1	0	1	1	*b*	1	*c*
IR1905-PP11-29-4-61	Tetep	1	1	0	3	0	1	1	2	1	0
IR1905-81-3-1	Tetep	2	2	0	2	0	1	1	5	1	0
IR3259-5-160-3	Tetep	1	2	*b*	2	0	4	1	*b*	1	0
74-5461	Tetep	2	1	*b*	*b*	0	1	1	*b*	*b*	3
IR5533-56-1-12	Tetep, Carreon	1	1	0	1	0	3	1	3	5	0
IR5533-PP850-1	Tetep, Carreon	1	1	*b*	3	0	2	1	*b*	1	0
IR5533-PP854-1	Tetep, Carreon	1	1	*b*	1	0	3	1	*b*	1	0
IR9660-00948-1	Dawn	2	1	*b*	2	0	1	1	*b*	1	0
Tetep (check)		1	4	0	1	0	4	1	1	1	0
Carreon (check)		*b*	1	0	1	0	*b*	1	5	3	1
Dawn (check)		4	1	0	*b*	2	*c*	1	4	*b*	4
Sankharika (susceptible check)		9	9	9	9	9	9	9	9	9	9
Pokhareli Masino (local resistant)		2	2	2	1	3	1	2	2	0	1
Chainan 2 (commercial)		8	7	5	6	6	3	1	3	4	5
Chainung 242 (commercial)		8	7	5	4	8	4	1	3	4	5
Taichung 176 (commercial)		8	9	5	7	8	4	3	1	4	6

[a] Standard Evaluation System for Rice: 0 = no lesions, 9 = all leaves dead. [b]Entry not used. [c]Missing.